14. Bessemer converter is used in the manufacturing of which of the following?

- A: Steel.
- B: Wrought iron.
- C: Cast iron.
- D: Pig iron.

15. f-block elements are also called?

- A: Outer transition elements
- B: Inner transition elements
- C: Transition elements
- D: Chalcogens

16. The half life of N_2O_5 is 24 minutes. How long will it take for such sample to decay to 25% of its original composition?

- A: 24mins
- B: 72mins
- C: 120mins
- D: 48mins

17. Group III-B series transition elements have how many electrons in the d-orbitals?

- A: One
- B: Two
- C: Three
- D: Four

18. Zn,Cd and Hg belongs to which series?

- A: I-B
- B: II-B
- C: III-B
- D: IV-B

19. d-block elements are called?

- A: Outer transition elements
- B: Inner transition elements
- C: Transition elements
- D: C-halogens

Test 2

1. Variable valency can not be shown by Zn because?

- A: It is soft.
- B: Its d-subshell is complete.
- C: It has only two electrons in the outermost orbit.
- D: Its d-subshell is incomplete.

2. 6d-series is in which period?

- A: 4^{th}
- B: 5th
- C: 6^{th}
- D: 7^{th}

3. $[Ti(H_2O)_6]^{+3}$ absorbs which wavelength of light?

- A: Yellow
- B: Red
- C: Blue
- D: Both a and b

4. Choose the correct statement:

- A: Chelates are more stable than ordinary complex
- B: Complexes are more stable than ordinary Chelates
- C: Monodentate ligand form chelate
- D: Chelates have no ring structure

5. One of the following property of transition elements vary with a regular parttern. Indicate that:

- A: Binding energy
- B: Covalent radius
- C: Cationic radius
- D: Oxidation state

6. Which of the following cations has maximum unpaired electrons?

- A: Ni^{2+}
- B: Co^{2+}
- C: Mn^{2+}
- D: Fe^{2+}

7. Amongst the following ions, which has the highest paramagnetism?

- A: $[Cr(H_2O)_6]^{+3}$
- B: $[Fe(H_2O)_6]^{+2}$
- C: $[Cu(H_2O)_6]^{+2}$
- D: $[Zn(H_2O)_6]^{+2}$

8. High temperature is maintained in the open hearth furnace by using?

- A: Methane gas.
- B: Water gas.
- C: Oil gas.
- D: Producers gas.

9. Oxidation state of "Fe" in $K_3[Fe(CN)_6]$ is:

- A: +2
- B: -6
- C: -3
- D: +3

10. Oxidation state of "Mn" in $KMnO_4$, K_2MnO_4, MnO_2 and $MnSO_4$ is in order:

- A: +7,+6,+2,+4
- B: +6,+7,+2,+4
- C: +4,+6,+7,+2
- D: +7,+6,+4,+2

11. Why Cr and Cu have half filled s-orbitals?

- A: They belong to s-block elements.
- B: They are alkali metals.
- C: This gives stability to d-orbitals.
- D: They are alkaline earth metals.

12. Typical transition elements are transition elements except which groups?

- A: I-A and II-A
- B: II-A and II-B
- C: II-B and III-B
- D: III-A and III-B

13. Which pair of transition elements show abnormal electronic configuration?

- A: Sc and Zn
- B: Cu and Sc
- C: Cu and Cr
- D: Zn and Cu

14. Which transition element has the highest melting point?

- A: Zn
- B: Co
- C: V
- D: W

15. Maximum paramagnetism is present in?

- A: Fe^{3+}
- B: Mn^{2+}
- C: Fe^{3+} and Cu^{2+}
- D: Both a and b

16. The oxidation number of Cr in $K_2Cr_2O_7$ is?

- A: +5
- B: +6
- C: +3
- D: Zero

17. Which of the following is typical transition metal?

- A: Sc
- B: Y
- C: Hg
- D: Co

18. Which of the following statement is correct?

- A: Sc belong to 5d series.
- B: Co belong to 4d series.
- C: Zn belongs to f-block of the periodic table.
- D: Fe belongs to 3d series.

19. Binding energies of the transition elements are?

- A: Weak
- B: Strong
- C: Very weak
- D: Depends on the series.

20. The ability of transition elements to form complexes is due to?

- A: Small size metal ion.
- B: Highly charged metal ion.
- C: Availability of empty d and f orbitals.
- D: All of the above.

Test 3

1. **Bessemer converter in the manufacture of steel from cast iron containing impurity of P is lined with which of the following?**

- A: $FePO_4$
- B: Fe_2O_3
- C: SiO_2
- D: CaO

2. **The outer electronic configuration of an atom is $3d^6 4s^2$. The atom is?**

- A: Iron
- B: Zinc
- C: Magnese
- D: Copper

3. **The charge in open hearth process consists of which of the following?**

- A: Scrap iron.
- B: Fe_2O_3.
- C: Cast iron.
- D: All of the above.

4. **Which element pair is although the transition elements, yet have half filled s-orbitals?**

- A: Cu and Co
- B: Co and Cr
- C: Cu and Cr
- D: Zn and Cr

5. **In the complexes, square planar geometry is given by which type of hybridization in the valence shell of central metal atom?**

- A: sp^3
- B: dsp^3
- C: d^2sp^3
- D: dsp^2

6. **The highest oxidation state of Mn is present in which of the following compounds?**

- A: K_2MnO_4
- B: $KMnO_4$
- C: MnO
- D: MnO_2

7. **The trace metal present in insulin is?**

- A: Mn
- B: Co
- C: Fe
- D: Zn

8. Transition elements have which of the following property(ies)?

- A: Pure metals.
- B: Complex formation.
- C: Alloys formation.
- D: All of the above.

9. Which of the following elements has zero binding energy?

- A: Zn
- B: Co
- C: V
- D: W

10. Anhydrous cobalt (II) chloride-3 is blue in colour but on dissolving it in water changes to pink in colour because?

- A: Its oxidation state changes.
- B: Its magnetic character changes,
- C: Its co-ordination number changes.
- D: In water it shows flourescence.

11. Number of ligands in the trigonal bypyramidal geometry of complexes are?

- A: 3
- B: 4
- C: 5
- D: 6

12. Which transition element has the maximum binding energy?

- A: Zn
- B: Co
- C: V
- D: W

13. A property which includes the II-B series in the transition elements is?

- A: They make complexes.
- B: They are pure metals.
- C: They have partially filled d-orbitals.
- D: They show transition properties in compound state.

14. Which of the following is the function of both $K_2Cr_2O_7$ and $KMnO_4$?

- A: Oxidizing agent.
- B: Germicide.
- C: Chrome tanning.
- D: All of the above.

15. Group VI-B of transition elements contains?

- A: Zn,Cd,Hg
- B: Fe,Ru,Os
- C: Cr,Mo,W
- D: Mn,Te,Re

16. Co-ordination number of Pt in $[PtCl(NO_2)(NH_3)_4]^{2-}$ is:

- A: -2
- B: +4
- C: +1
- D: +6

17. When Pig iron is cooled slowly, grey cast iron is formed in which carbon is present as which of the following?

- A: Graphite
- B: Coal
- C: Cemenite
- D: CaC_2

18. The lowest oxidation state of Fe is in which of the following compounds?

- A: Mohr's salt
- B: Fe_2O
- C: $K_4Fe(CN)_6$
- D: $Fe(CO)_5$

19. Which is the electronic configuration of Cr?

- A: $3d^4 4s^2$
- B: $3d^5 4s^1$
- C: $3d^6 4s^1$
- D: $3d^1 4s^{11}$

20. Electronic configuration of gold $[Au_{79}]$ is ?

- A: [Xe] $4f^{14},5d^{10},6s^1$
- B: [Xe] $4f^{10},5d^{10},6s^2$
- C: [Xe] $4f^{14},5d^9,6s^2$
- D: [Xe] $4f^{14},5d^{10},6s^2$

Test 4

1. All chromates mostly have which color?

- A: Deep red
- B: Yellow
- C: Bluish green
- D: White

2. An atom or molecule with all completely filled orbital's show which of the following behavior?

- A: Ferromagnetism
- B: Paramagnetism
- C: Diamagnetism
- D: None of the above

3. Which has least melting point among the given list?

- A: Zn
- B: Co
- C: V
- D: W

4. Which period starts from $_{17}Sc$ to $_{30}Zn$?

- A: Sixth period
- B: Fifth period
- C: Fourth period
- D: Third period

5. Pure $KMnO_4$ exists in the form of?

- A: A white solid.
- B: Pale yellow liquid.
- C: Dark purple lustrous crystal.
- D: Brown powder.

6. A property(ies) which differentiate the interstitial compounds from true compounds is (are)?

- A: Non-stoichiometric ratio.
- B: No true bond.
- C: No whole number ratio .
- D: All of the above.

7. $[Ti(H_2O)_6]^{+3}$ transmits which light:

- A: Yellow and red
- B: Yellow and blue
- C: Red and white
- D: Red and Blue

8. Puddling process is used in the manufacturing of which of the following?

- A: Wrought iron
- B: Cast iron
- C: Steel
- D: Pig iron

9. The presence of H^+ in equilibrium solution of chromate and dichromate ions favours which of the following?

- A: $Cr_2O_7^{-2}$
- B: CrO_4^{-2}
- C: $Cr_2O_5^{-3}$
- D: Equilibrium is maintained.

10. Acidified $KMnO_4$ acts as?

- A: Red agent
- B: Excellent precipitating reagent
- C: Oxidizing agent.
- D: Reducing agent.

11. The percentage of carbon in different types of iron products is in the order of?

- A: Cast iron>Wrought iron>Steel
- B: Wrought iron>Steel>Cast iron
- C: Cast iron>Steel>Wrought iron
- D: Cast iron=Steel>wrought iron

12. Which of the following transition elements has the maximum ferromagnetic character?

- A: Pt
- B: Co
- C: Fe
- D: Ni

13. The first transition series ends on the element?

- A: Scandium
- B: Cadmium
- C: Zinc
- D: Mercury

14. Chromyl chloride test is performed to confirm which of the following?

- A: PO_4^{3+}
- B: Cr^{3+}
- C: Cl^- ions
- D: SO_4^{2-} ions

15. The strength of binding energy of transition elements depends upon which of the following?

- A: Number of electrons pairs.
- B: Number of unpaired electrons.
- C: Number of neutrons.
- D: Number of protons.

16. Most of the transition elements show strong?

- A: Ferromagnetism.
- B: Paramagnetism.
- C: Diamagnetism.
- D: None of the above.

17. D-block elements in first series that show anomalous configuration are?

- A: Cr and Ni
- B: Cr and Cu
- C: Cu and Co
- D: Fe anf Ni

18. 4-d-series is in which period?

- A: 4^{th}
- B: 5th
- C: 6^{th}
- D: 7^{th}

19. The series containing elements $_{57}La$,$_{42}Hf$, $_{80}Hg$ is in which period?

- A: 4^{th}
- B: 5th
- C: 6^{th}
- D: 7th

20. 5d-series is in which period?

- A: 4^{th}
- B: 5th
- C: 6th
- D: 7^{th}

Basic Organic Chemistry

TEST 1

1. The self linking property of carbon is called?

- A: Isomerism
- B: Hybridization
- C: Catenation
- D: Cracking

2. **Ka values of different acids are given :**

given.

Acid	Ka
CH_3COOH	1.85×10^{-5}
CCl_3COOH	2.3×10^{-2}
$CHCl_2COOH$	5.0×10^{-3}
$CH_2ClCOOH$	1.3×10^{-3}

The order of acid strength is :

- A: $CCl_3COOH > CHCl_2COOH > CH_2ClCOOH > CH_3COOH$
- B: $CH_3COOH > CCl_3COOH > CHCl_2COOH > CH_2ClCOOH$
- C: $CCl_3COOH > CHCl_2COOH > CH_3COOH > CH_2ClCOOH$
- D: $CH_2ClCOOH > CH_3COOH > CCl_3COOH > CHCl_2COOH$

3. The state of hybridization of carbon atom in methane is?

- A: sp^3
- B: sp^2
- C: sp
- D: None of the above.

4. Which process increases the yield of gasoline from petroleum?

- A: Cracking
- B: Polymerization
- C: Reforming
- D: Sublimation

5. Cis-trans isomerism is also known as?

- A: Geometric Isomerism
- B: Position Isomerism
- C: Chain Isomerism
- D: Function Isomerism

6. The formula for alanine is :

- A: C_5H_7NO
- B: $C_3H_7NO_2$
- C: C_5H_3NO
- D: $C_3H_3NO_2$

7. The isomers must have the same?

- A: Structural formula
- B: Molecular formula
- C: Chemical properties
- D: Physical properties.

8. The vital force theory was rejected by?

- A: Jhon Dalton
- B: Friedrick Wohler
- C: Dmitri Mendeleev
- D: None of the above

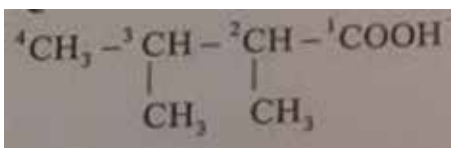
9. Which type of isomerism depends on distribution of carbon atoms on each side of functional group?

- A: Structural isomerism
- B: Functional isomerism
- C: Chain isomerism
- D: Metamerism

10. Octane no. of any fuel can be improved by a process called?

- A: Pyrolysis
- B: Reforming
- C: Polymerization
- D: Condensation

11. **In the given compound which one is alpha carbon?**



- A: 1
- B: 2
- C: 3
- D: 4

12. The quality of petroleum is determined by?

- A: Decane number
- B: Octane number
- C: Hexane number
- D: Color

13. Natural Gas mainly consists of?

- A: Mixture of high boiling hydrocarbons
- B: Methane
- C: Sulphur
- D: Both A and B.

14. The octane number of gasoline may increased by adding?

- A: EDTA
- B: $PB(C_2H_5)_4$
- C: NaOH
- D: $AgNO_3$

15. Rate of reactions of most organic compounds are?

- A: Very slow
- B: Very fast
- C: Medium
- D: No typical characteristic in the regard.

16. Which of the following was believed to be true as per the vital force theory?

- A: Organic compounds have different properties as compared to the inorganic compounds
- B: Organic compounds can only be manufactured within a living organism.
- C: Organic compounds can never be synthesized from inorganic compounds.
- D: Both B and C.

17. Linear shape is associated with which set of hybrid orbitals ?

- A: sp
- B: sp^2
- C: sp^3
- D: dsp^2

18. The process in which smaller molecules of alkanes and alkenes are produced from petorleum is known as?

- A: Cracking
- B: Reforming
- C: Alkanizing
- D: Decomposing

19. Natural gas may be used for which of the following purposes?

- A: Power generation
- B: Fertilizer manufacturing
- C: Industrial fuel
- D: All of the above.

20. Metamerism is a type of isomerism that has?

- A: Difference in nature of carbon chain.
- B: Unequal distribution of carbon atoms on either side of functional group.
- C: Difference in the position of same functional group.
- D: Different functional groups.

Test 2

1. **In sp3 hybridization, the geometry of molecules is?**

- A: Co-planar
- B: Trigonal pyramidal
- C: Tetrahedral
- D: All are possible

2. **Possible numbers of isomers in the organic compounds increase rapidly with?**

- A: Increase in carbon atoms.
- B: Increase in hydrogen number
- C: Increase in functional group
- D: All of the above.

3. **Carbon has the unique ability to form long chains by bonding with other carbon atoms. This property of self linking in carbon is known as:**

- A: Condensation
- B: Polymerization
- C: Catenation
- D: Cyclization

4. **In CCl_4 molecule the four valencies of carbon atom are directing towards the corners of a ?**

- A: Cube
- B: Hexagon
- C: Equilateral triangle
- D: Tetrahedron

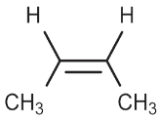
5. **In a double-bonded carbon atom (C=C):**

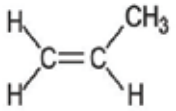
- A: Hybridization occurs between the s-orbitals and p-orbitals
- B: Hybridization occurs between the s-orbitals and two p-orbitals
- C: Hybridization occurs between the s-orbitals and three p-orbitals
- D: No hybridization occurs between the s- and p-orbitals

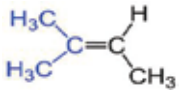
6. **Which of the following is not true about organic compounds?**

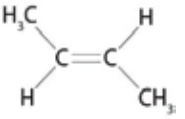
- A: They do not show ionic reactions.
- B: They have slow rate of reactions.
- C: They readily dissolve in water.
- D: All of the above.

7. The cis-isomerism is shown by:

A: 

B: 

C: 

D: 

8. 1-Chloropropane and 2-Chloropropane are isomers of each other. The type of isomers between them is:

- A: Cis-trans isomerism
- B: Chain isomerism
- C: Positional isomerism
- D: Functional group isomerism

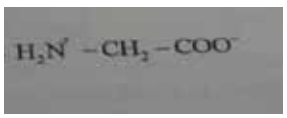
9. An isomer of ethanol (ethyl alcohol) is?

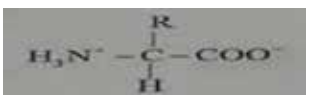
- A: Dimethyl ether
- B: Diethyl ether
- C: Ethylene glycol
- D: Methanol

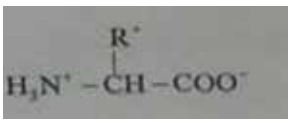
10. Halothane used as an anesthetic in hospitals has a chemical formula?

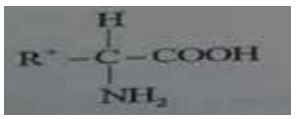
- A: 2chloro-1,1,1-trifloroEthane,
- B: 2-bromo-2chloro-1,1,1-trifloroEthane,
- C: 2-bromo-1,1,1-trifloroEthane,
- D: 2-fluoro-2chloro-1,1,1-trifloroEthane,

11. Select the correct zwitter ionic structure of amino acid?

A: 

B: 

C: 

D: 

12. Octane number of 2,2,4-Trimethyl Pentane is?

- A: 0
- B: 1
- C: 10
- D: 100

13. Which of the followin isomerism is independent of the functional group?

- A: Chain isomerism
- B: Position isomerism
- C: Functional group isomerism
- D: Both A and B.

14. At what temperature coal is converted it into coke, coal gas, and coal tar in the absence of air?

- A: Temperature ranging from 500-1000°C
- B: Temperature ranging from 1000-2000°C
- C: Temperature ranging from 2000-5000°C
- D: Temperatures above 5000°C

15. Which type of isomerism is shown by the following compounds?

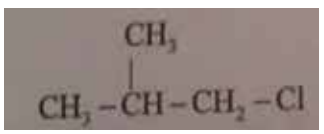
$CH_3 - O - CH_3$ and $CH_3 - CH_2 - OH$

- A: Chain isomerism
- B: Position isomerism
- C: Metamerism
- D: Functional group isomerism

16. The figure below shows what kind of isomers?

- A: Position isomers
- B: Metamers
- C: Tautomers
- D: Cis-trans isomers.

17. **The IUPAC name of the given compound is**

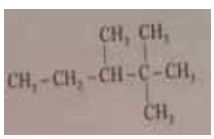
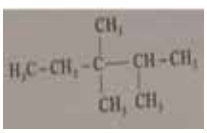
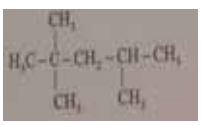
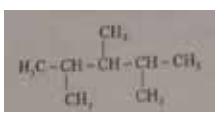


- A: 1-chloro-2-methylpropane
- B: 1-chloro-2-methylbutane
- C: Isobutyl chloride
- D: 2-Methyl-3-Chloropropane

18. Ethylene glycols are used as :

- A: Anaesthetic
- B: Knocking agent
- C: Freezing agent
- D: Anti-freezing agent

19. What is the structural formula of 2,3 trimethylpentane ?

- A: 
- B: 
- C: 
- D: 

20. Which set of hybrid orbitals has a triangular shape?

- A: sp^3
- B: sp
- C: sp^2
- D: dsp^2

Test 3

1. Octane number of gasoline is the percentage of ?

- A: n-pentane in a mixture
- B: n-butane in a mixture
- C: n-hexane in a mixture
- D: 2, 2, 4 – trimethyl pentane in a mixture

2. Which of the following organic compound has sp hybridization?

- A: Methane
- B: Ethane
- C: Ethyne
- D: Ethene

3. The catalyst used in cracking is?

- A: Lead
- B: Sodium
- C: Mixture of silica and alumina.
- D: Mixture of lead and iron.

4. How many pi bonds are formed in the sp hybridization of carbon atom?

- A: 1
- B: 2
- C: 3
- D: 4

5. Which of the following is not an organic compound?

- A: Urea
- B: Oxalic acid
- C: Natural gas
- D: Plaster of Paris

6. Which of the following cracking process requires the lowest temperature?

- A: Thermal cracking
- B: Catalytic cracking
- C: Steam cracking
- D: Cracking is independent of the temperature.

7. A triple bond consists of?

- A: Three sigma bonds
- B: One sigma and two pi bonds.
- C: Two sigma and one pi bond
- D: Three pi bonds.

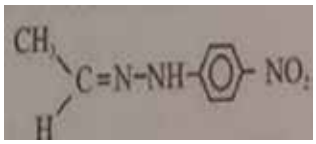
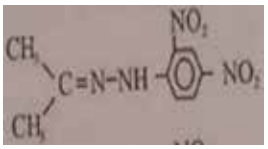
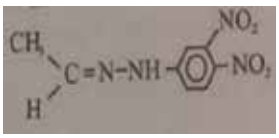
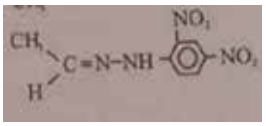
8. Which of the following compounds does not contain an OH group?

- A: Alcohol
- B: Phenol
- C: Aldehyde
- D: Carboxylic acid

9. A double bond consists of?

- A: Two sigma bond
- B: One sigma and one pi bond
- C: One sigma and two pi bond
- D: Two pi-bond

10. When acetaldehyde reacts with 2,4 dinitrophenylydrazine which one of the following product is formed?

- A: 
- B: 
- C: 
- D: 

11. Ethene has what type of hybridization?

- A: sp
- B: sp^2
- C: sp^3
- D: None of the above.

12. Simplest hydrocarbon to have structural isomer is?

- A: C_2H_2
- B: C_3H_8
- C: C_4H_{10}
- D: C_5H_{12}

13. Which of the following fractions of petroleum has the highest boiling point range (amongst the given list)?

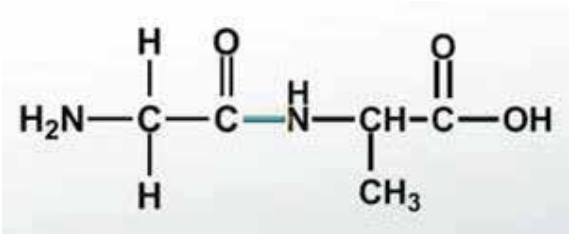
- A: Kerosene
- B: Gasoline
- C: Ligroin
- D: Petroleum ether

14. Saturated Alicyclic hydrocarbons have general formula?

- A: C_nH_n
- B: C_nH_{2n}
- C: C_nH_{3n}
- D: $C_{2n}H_{3n}$

15. Cracking process useful for obtaining lower unsaturated hydrocarbons is?

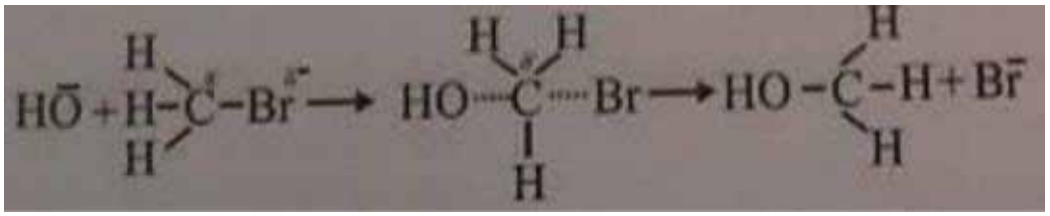
- A: Thermal cracking
- B: Catalytic cracking
- C: Steam cracking
- D: All of the above.



16. The structure is :

- A: Gly-Ala (dipeptide)
- B: Asp-Gly (dipeptide)
- C: Gly-Val (dipeptide)
- D: Asp-Val (dipeptide)

17.



In the above reaction, the configuration of product is :

- A: 100% same of the configuration of reactant.
- B: 50% retained
- C: 50% inverted
- D: 100% opposite from the configuration of reactant

18. A double bond consists of?

- A: Two sigma bonds
- B: One sigma and two pi bonds
- C: Two pi bonds
- D: One sigma and one pi bond.

19. The type of isomerism found in 1 – butene and 2 – butene is ?

- A: Chain isomerism
- B: Position isomerism
- C: Metamerism
- D: Functional group isomerism

20. In sp^2 hybridization the unhybridized orbital is?

- A: Parallel to the triangle.
- B: 90^o to the triangle.
- C: 120^o to the triangle.
- D: 150^o to the triangle.

Test 4

1. **Which of the following is an alcohol?**

- A: CH_3-O-CH_3
- B: CH_3-CH_2-OH
- C: CH_3-COOH
- D: CH_3-CH_2-NH_2

2. **Isomerism arising due to shifting of proton from one atom to another in the same molecule is called?**

- A: Cis-trans Isomerism
- B: Ionic isomerism
- C: Tautomerism
- D: Position isomerism

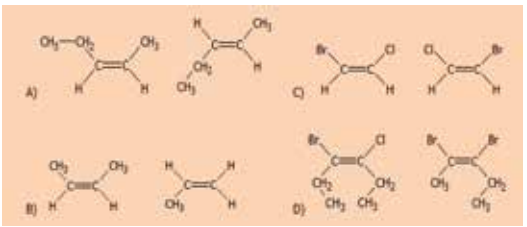
3. **Carbolic acids are rather hard to reduce, which of the following compounds is used to convert them to primary alcohols?**

- A: H_2SO_4
- B: V_2O_5
- C: $LiAlH_4$
- D: $K_2Cr_2O_7$

4. **An organic acid "z" reacts separately with sodium bicarbonate, sodium hydroxide, and sodium carbonate. Which one of the followings represents the structure of "z"**

- A: $HCOOC_2H_5$
- B: CH_3-CH=CH_2
- C: CH_3CH_2OH
- D: H_3C-CH_2-COOH

5. **Which one of the following are cis and trans isomers of each other?**



- A: A
- B: B
- C: C
- D: D

6. The structure of alkynes can be explained by which type of hybridization?

- A: sp^2 hybridization
- B: sp^3 hybridization
- C: sp^5 hybridization
- D: sp hybridization

7. Different organic compounds with similar behaviour are called?

- A: Isomers
- B: Catons
- C: Metamers
- D: Homologous series

8. Coal is believed to be produced after a long time decay of ?

- A: Animals
- B: Fossils
- C: Wood
- D: Ores

9. Which chemist synthesized urea from ammonium cyanate?

- A: Berzelius
- B: Kolbe
- C: Wholer
- D: Lavoisier

10. Isomers are only possible in hydrocarbons when they contain more than?

- A: 2 carbon atoms.
- B: 3 carbon atoms.
- C: 4 carbon atoms.
- D: 5 carbon atoms.

11. Which one of the following shows correct formula of glutamic acid?

- A: $C_5H_9NO_4$
- B: C_5H_9NO
- C: $C_5H_7NO_4$
- D: $C_8H_9NO_4$

12. Which one of the following is an acyclic hydrocarbon?

- A: C_6H_6
- B: C_2H_6
- C: C_6H_{12}
- D: CH_4

13. The properties of organic compounds are defined by?

- A: Covalent bonds
- B: Functional groups
- C: Ionic bonds
- D: Geometry of molecules

14. Which of the following is not an organic compounds classification?

- A: Acyclic
- B: Aromatic
- C: Isomer
- D: Saturated

15. Which of the following isomers require a lot of energy for their formation?

- A: Position isomerism
- B: Cis-trans isomerism
- C: Tautomerism
- D: Metamerism

16. Which of them is heterocyclic organic compound?

- A: Benzene
- B: Cresol
- C: Naphthalene
- D: Pyridine

17. Which one of the following acids is a basic amino acid?

- A: Glycine
- B: Alanine
- C: Lysine
- D: Glutamic acid

18. Bond angle in sp^3 hybridization is?

- A: 109.5^o
- B: 120^o
- C: 150^o
- D: 180^o

19. The organic compounds containing at least one benzene ring are called?

- A: Homocyclic compounds
- B: Heterocyclic compounds
- C: Alicyclic compounds
- D: Aromatic compounds

20. Ethers show the which type of isomerism?

- A: Position isomerism
- B: Functional group isomerism\
- C: Cis-trans isomerism
- D: Metamerism

Hydrocarbons

TEST 1

1. "The possibility of different pairing schemes of valence electrons of atoms" is called?

- A: Pauli's exclusion principle
- B: Auf bau principle
- C: Resonance
- D: Hund's rule

2. The conversion of n-hexane into benzene by heating in the presence of $Cr_2O_3 + Al_2O_3 + SiO_2$ is called?

- A: Isomerization
- B: Aromatization
- C: Dealkylation
- D: Rearrangement

3. Which of the following is a free radical?

- A: Cl^+
- B: NO_2^-
- C: Cl^o
- D: Cl^-

4. Acylation of benzene to produce aliphatic aromatic ketones is known as?

- A: Clemmensen reduction
- B: Hydroformylation
- C: Benzoin condensation
- D: Friedal-Craft's reaction

5. Alkyl halides on heating with alcoholic potassium hydroxide undergo dehydrohalogenation to produce?

- A: Alkanes
- B: Alkenes
- C: Alkynes
- D: Both b and c

6. Benzene has how many π electrons?

- A: 4 π electrons
- B: 8 π electrons
- C: 6 π electrons
- D: 3 π electrons

7. Olefins refer to which of the following?

- A: Alkenes
- B: Compounds having double bonds
- C: Saturated hydrocarbons
- D: Unsaturated hydrocarbons

8. Hoffmann found benzene in which of the following?

- A: Vegetable oil
- B: Coal
- C: Petroleum
- D: Coal tar

9. Which of the following species has carbon atom as negatively charged?

- A: Carbanion
- B: Carbonium ion
- C: Carbocation
- D: Free radical

10. Formation of ethyne from ethylene bromide is an example of?

- A: Spontaneous reaction
- B: Elimination reaction
- C: Substitution reaction
- D: Addition reaction

11. Lindllar's catalyst is poisoned by which of the following?

- A: $Pd(BaSO_4)$
- B: Quinoline
- C: Na
- D: Liquid ammonia

12. The shape of benzene molecule is?

- A: Planar trigonal
- B: Linear
- C: Plane hexagonal
- D: Pyramidal

13. Aromatic hydrocarbons are the derivatives of?

- A: Normal series of paraffins
- B: Alkene
- C: Benzene
- D: Cyclohexane

14. The conversion of n-hexane into benzene by heating in the presence of Cr_2O_3 is called?

- A: Dehydrogenation
- B: Aromatization
- C: Dealkylation
- D: Isomerization

15. What is the general formula of alkanes?

- A: C_nH_{2n+4}
- B: C_nH_{2n}
- C: C_nH_{2n-2}
- D: C_nH_{2n+2}

16. The benzene molecule contains?

- A: Three sp^3 hybrid carbons
- B: Three sp^2 hybrid carbons
- C: Six sp^3 hybrid carbons
- D: Six sp^2 hybrid carbons

17. During nitration of benzene, the active nitrating agent is?

- A: NO_3
- B: NO_2^+
- C: NO
- D: HNO_3

18. Which of the following is used as an anaesthetic?

- A: Methane
- B: Ethene
- C: Ethyne
- D: Acetylene

Test 2

1. Which of the following product is produced on the dehydration of alcohols?

- A: Alkene
- B: Alkyne
- C: Acids
- D: Aldehydes

2. A secondary carbon atom is one that is joined to:

- A: Methyl group
- B: Three alkyl groups
- C: Two alkyl groups
- D: One alkyl group

3. The benzene molecule contains?

- A: Three double bonds
- B: Two double bonds
- C: One double bond
- D: Delocalized π-electrons charge

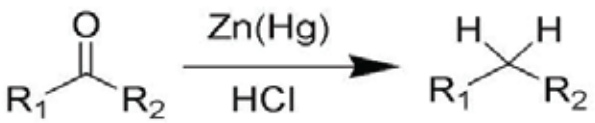
4. Which of the following salt is used for the preparation of alkanes by Kolbe's electrolysis method?

- A: Sodium or potassium salt of monocarboxylic acid.
- B: Sodium or potassium salt of dicarboxylic acid.
- C: sodium or potassium salt of unsaturated dicarboxylic acid.
- D: All of these can be used.

5. What is the order of reactivity of halogens for the halogenation of alkanes?

- A: $F_2>Cl_2>Br_2>I_2$
- B: $F_2>Br_2>Cl_2>I_2$
- C: $I_2>Br_2>Cl_2>F_2$
- D: $I_2>Cl_2>Br_2>F_2$

6. The reaction given below is called?



- A: Fehling's test
- B: Clemmensen's reaction
- C: Sodium Nitroprusside test
- D: Wolf-kishner's reaction

7. When aluminium carbide is treated with water, we get which of the following?

- A: Ethyl formate
- B: Acetaldehyde
- C: Ethylene
- D: Methane

8. In which case the C-C bond length is the same?

- A: Propyne
- B: 1-Butene
- C: 2-Butene
- D: Benzene

9. Nitration of toulene takes place at?

- A: Both o- and p- positions
- B: m- position
- C: O- position
- D: p- position

10. The compound with an atom which has unshared pair of electron is called:

- A: Electrophile
- B: Nucleophile
- C: Protonophile
- D: None of these

11. Polymerization of acetylene forms which of the following?

- A: Propane
- B: Butane
- C: Benzene
- D: Naphthalene

12. Ammonical solution of silver nitrate reacts with which of the following to give while precipitates?

- A: Ethyne
- B: Ethanol
- C: Ethene
- D: Methane

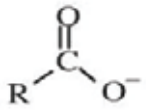
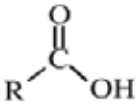
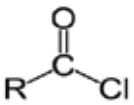
13. Dehydrohalogenation of Alkyl Halides occur in the presence of?

- A: An alcoholic base
- B: Alcoholic acid
- C: An alcoholic salt
- D: An alcoholic grignard reagent

14. Which of the following compound is polycyclic?

- A: Xylene
- B: Napthalene
- C: Styrene
- D: Cumene

15. The introduction of an alkyl group in benzene takes place in the presence of $AlCl_3$ and:

- A: 
- B: 
- C: 
- D: R-Cl

16. What is the reactivity of alkynes towards electrophilic reagent as compared to alkenes?

- A: Less reactive towards electrophiles
- B: More reactive towards electrophile
- C: Does not react with electrophile
- D: Few compounds are highly reactive and others are less reactive towards electrophile

17. Which of the following decolourizes the aqueous bromine?

- A: 1-pentene
- B: Pentane
- C: 2-methyl-1-butene
- D: Both a and c

18. Which of the following compounds are produced on the reduction of ozonides by treating with Zn and water?

- A: Aldehydes
- B: Acetones
- C: Ketones
- D: All of the above

19. The substitution -H by NO_2 in benzene ring is called:

- A: Nitration
- B: Ammonolussis
- C: Sulphonation
- D: Reduction of benzene

20. Ortho and para groups are generally?

- A: Neutral groups
- B: Deactivating groups
- C: Activating groups
- D: None of the above

Test 3

1. **Acetylides reacts with acids to produce alkynes.The process of alkynes regeneration is used for?**

- A: Purification of alkynes
- B: Identification of alkynes
- C: Preparation of alkynes
- D: All of the above

2. **Alkanes can be prepared by which of the following method?**

- A: Decarboxylation of monocarboxlic acids
- B: Sabatier-Sendern's reaction
- C: Reduction of carbonyl compounds
- D: All of the above.

3. **Which of the following compounds will not give a precipitate with Tollen's reagent?**

- A: 1-Butyne
- B: Ethyne
- C: 2-Pentyne
- D: 1-Pentyne

4. **Halogenation of alkanes is an example of which of the following?**

- A: Oxidation
- B: Electrophilic substitution
- C: Neucleophilic substitution
- D: Free radical substitution

5. **The addition of HX to an alkene involves which of the following steps?**

- A: Transfer of proton from HX towards alkene.
- B: Combination of carbocation with the X^{-1} ion.
- C: Both A and B.
- D: None of the above.

6. **Which of the following compounds reacts slower than benzene in electrophilic substitution?**

- A: Phenol
- B: Nitrobenzene
- C: Toulene
- D: Aniline

7. **Aromatic compounds burn with sooty flame because?**

- A: They have high percentage of hydrogen
- B: They have a ring structure
- C: They have high percentage of carbon
- D: They resist reaction with air

8. The electrophile in aromatic sulphonation is?

- A: H_2SO_4
- B: HSO_4^-
- C: SO_3
- D: SO_3^+

9. Which of following is formed by reacting alkyne with ammonia?

- A: Acrylonitrile
- B: Methyl cyanide
- C: Methyl nitrile
- D: Oxalic acid

10. Which of the following is the molecular formula of TNT?

- A: $C_6H_2(NO_2)_3CH_3$
- B: $C_6H_3(NO_2)_3CH_3$
- C: $C_6H_2(NO_2)_3C_2H_5$
- D: $C_6H_2(NO_2)_3C_3H_7$

11. Which of the following method can not be used to prepare ethane?

- A: Kolbe's electrolysis method
- B: Clemmensen's reduction
- C: Wolf-kishner's reduction
- D: Decarboxylation of monocarboxylic acid

12. When propyne is treated with aqueous H_2SO_4 in the presence of $HgSO_4$ then the product formed is?

- A: Propyl hydrogen sulphate
- B: Acetone
- C: Propanal
- D: Propanol

13. Ethene polymerizes to polythene under the parametic conditions of?

- A: 100atm,100^oC and 0.1% O_2
- B: 100atm,400^oC and 0.1% O_2
- C: 400atm,100^oC and 0.1% O_2
- D: 400atm,150^oC and 0.1% O_2

14. The melting point of palmitic acid is?

- A: 62.9 ^oC
- B: 63.1 ^oF
- C: -8 ^oC
- D: -8 ^oF

15. Hydroxylation of alkenes produces?

- A: Ketones
- B: Polyhydric alcohols
- C: Esters
- D: Alkynes

16. Which of the following is a Lindlar's catalyst?

- A: $Pd + BaSO_4$
- B: Platenized charcoal deactivated with sulphur compounds
- C: $Pd + H_2$
- D: $Pd + CO_2$

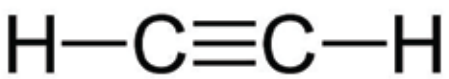
17. Which one of the following molecules has shortest distance of carbon atoms?

- A: CH_3-CH_3
- B: $CH_2 = CH_2$
- C: CH = CH
- D: CH_3-CH_2-CH_3

18. Which of the following test can be used for distinguishing an alkane and alkene?

- A: Bromine water test
- B: Hydroxylation
- C: Ozonolysis
- D: All of the above

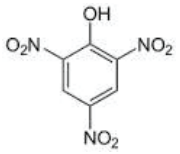
19. Markownikoff's rule provides guidance on the addition of HBr on which of the following?

- A: 
- B: $CH_3CH=CHCH_3$
- C: $CH_3CH=CH_2$
- D: $CH_2=CH_2$

20. Which of the following test is used for determining the location of double bond in alkenes?

- A: Bromine water test
- B: Ozonolysis
- C: Baeyer's test
- D: All of the above

Test 4

1.  **is named as:**

- A: Nitro phenol
- B: Benzoic acid
- C: Malonic acid
- D: Picric acid

2. Which of the following is called Baeyer's reagent is?

- A: 1% alkaline $KMnO_4$
- B: 1% acidified potassium dichromate
- C: $(R)_3Al$ and $TiCl_4$
- D: Liquid ammonia

3. Which of the following is used in oxyacetylene torch used for cutting and welding metals?

- A: Ethylene
- B: Acetylene
- C: Ethyne
- D: Both b and c

4. Number of acidic hydrogen/s present in 1-Butyne is?

- A: 1
- B: 2
- C: 4
- D: 6

5. Neoprene is formed by the polymerization of which of the following?

- A: Acetylene
- B: Chloroprene
- C: Divinyl acetylene
- D: 1,5-Hexadiene-3-yne

6. The reaction of toulene with Cl_2 in the presence of $FeCl_3$ gives which of the following?

- A: Chloro benzene
- B: Benzyl chloride
- C: m-chlorotoulene
- D: o- and p-chlorotoulene

7. As compared to boiling points of linear chain isomers, the boiling points of branched chain alkanes are:

- A: Higher
- B: Lower
- C: Same
- D: Does not depend upon branching

8. What is the general formula of alkenes?

- A: C_nH_{n+2}
- B: C_nH_{2n}
- C: C_nH_{2n-2}
- D: C_nH_{2n+2}

9. Kolbe's synthesis of sodium salt of botanic acid gives:

- A: Ethylene
- B: n-Hexane
- C: Iso-butene
- D: Butane

10. Which of the following reacts with metal by displacing H-atom and releasing hydrogen gas?

- A: Methane
- B: Ethane
- C: Ethene
- D: Ethyne

11. Alkynes give aldehydes and ketones by reacting with?

- A: Water in the presence of sulphuric acid and mercuric sulphate
- B: Water in the presence of hydrum sulphate and sulphuric acid
- C: Water in the presence of mercuric sulphate and $KMnO_4$
- D: All of the above.

12. Which of the following compound is the most reactive?

- A: Benzene
- B: Ethene
- C: Ethane
- D: Ethyne

13. Which of the following acid can be used as a catalyst in Friedal-Craft's reaction?

- A: $AlCl_3$
- B: HNO_3
- C: $BeCl_2$
- D: HCl

14. Which of the following products is formed on the incomplete oxidation of alkanes in a limited supply of oxygen or air?

- A: Carbon dioxide and water
- B: Carbon mono oxide and water
- C: Carbon monoxide, carbon and water
- D: Carbon dioxide, carbon monoxide

15. Which of the following is the Baeyer's reagent?

- A: Aqueous Br_2 water
- B: Neutral permanganate
- C: Acidic $KMnO_4$
- D: Alkaline $KMnO_4$

16. Ethene reacts with steam at 300°C in the presence of phosphoric acid as a catalyst to form?

- A: Ethane
- B: Ethanol
- C: Ethanoic acid
- D: Ethyl ethanoate

17. Which of the following is a Baeyer's reagent?

- A: Aqueous Br_2 water
- B: Neutral permanganate
- C: Acidic $KMnO_4$
- D: Alkaline $KMnO_4$

18. Vicinal dihalides with zinc dust gives which of the following?

- A: Alkenes
- B: Alkanes
- C: Alkynes
- D: All of them

19. When methane reacts with Cl_2 in the presence of diffused light, which of the following products are obtained?

- A: Chloroform
- B: Carbon tetrachloride
- C: Dichloromethane
- D: Mixture of a, b and c

20. Which of the following compound shows maximum repulsion with water?

- A: C_6H_6
- B: C_2H_5OH
- C: $CH_3CH_2CH_2OH$
- D: CH_3OCH_3

Alkyl Halides

TEST 1

1. Which of the following are also called alkyl halides?

- A: Monohaloalkanes
- B: Dihaloalkanes
- C: Trihaloalkanes
- D: Polyhaloalkanes

2. When alcohols react with phosphorus trihalides to form alkyl halides, which by-product is formed in this reaction?

- A: H_3PO_3
- B: $POCl_3$
- C: HCl
- D: Both b and c

3. Why substrate carbon atom changes its state of hybridization in S_N2 mechanism of alkyl halides?

- A: To speed up reaction
- B: To provide more product
- C: Permanent change is required in hybridization
- D: To Provide enough room to attack Nu

4. Which catalyst is required for this reaction?

- A: Pyridine
- B: ThO_2
- C: $ZnCl_2$
- D: NaOH

5. How many classifications of alkyl halides are there?

- A: Two
- B: Three
- C: Four
- D: Five

6. Which of the following is not a good leaving group?

- A: Cl^-
- B: Br^-
- C: HSO^-_4
- D: OH^-

7. Which of the following akyl halide show both S_N1 and S_N2 mechanism?

- A: Primary alkyl halides
- B: Secondary alkyl halides
- C: Tertiary alkyl halides
- D: All of the above.

8. In secondary alkyl halides, the halogen atom is attached to a carbon atom which is further attached to?

- A: Two hydrogen atoms
- B: Two halogen atoms
- C: Two carbon atoms
- D: One halogen and one hydrogen

9. What is the condition in nucleophilic Substitution Bimolecular mechanism of alkyl halides?

- A: Extent of bond breakage > Extent of bond formation
- B: Extent of bond breakage = Extent of bond formation
- C: Extent of bond breakage is < Extent of bond formation
- D: Bond breakage first followed by bond formation

10. The strength of bonds shows that fluoro compounds will be _____ and have _____ bond?

- A: Less reactive, strongest
- B: Less reactive, weakest
- C: Most reactive, strongest
- D: Most reactive, weakest

11. How many processes are involved in nucleophilic substitution mechanism of alkyl halides?

- A: Two
- B: Three
- C: Four
- D: Five

12. Which factors are involved in the first step of nucleophilic substitution unimolecular of alkyl halides?

- A: Reversible, Slow
- B: Ionization of alkyl halide
- C: Rate determining
- D: All of the above.

13. In a nucleophilic substitution reaction if bond breakage happens first and is followed by a bond formation, the mechanism is shown by which alkyl halides?

- A: Primary Alkyl halides
- B: Secondary alkyl halides
- C: Tertiary alkyl halides
- D: Both b and c

14. The reaction is called a Bimolecular reaction of alkyl halide if?

- A: Two molecules take part in the rate determining step
- B: Two molecules take part in the reaction
- C: Two molecules of products are formed in the reaction
- D: One molecule of reactant and one molecule of product in the chemical reaction

15. Nucleophile in nucleophilic substitution bimolecular mechanism of alkyl halides attacks from which side?

- A: Attacks from the side opposite to the leaving group
- B: Attacks from the same side as of the leaving group
- C: Attack does not depend on the side
- D: May be a or b

16. Which of the following react with NaI to prepare simple Alkyl Iodide?

- A: Alkyl fluoride
- B: Alkyl chloride
- C: Alkyl bromide
- D: Both b and c.

17. Which of the following Is the rate determining step in S_N1 mechanism of alkyl halide?

- A: First step
- B: Second step
- C: Both a and b
- D: May be a or b

18. Which of the following product is formed on the complete reaction of Ethyl bromide with ammonia?

- A: Ethylamine
- B: Diethylamine
- C: Quaternary ethylammonium
- D: Triethylamine

19. How many steps are involved in the Nucleophilic substitution of bimolecular mechanism of alkyl halides?

- A: One
- B: Two
- C: Three
- D: Four

20. Elimination of bimolecular reactions of alkyl halides involves?

- A: First order kinetics
- B: Second order kinetics
- C: Third order kinetics
- D: Zero order kinetics

Test 2

1. Aryl halides are less reactive towards electrophones than alkyl halides due to?

- A: High boiling point
- B: Resonance
- C: Stability of carbonium ion
- D: None of these

2. Order of reactivity of alkenes with hydrogen halide is

- A: HBr > HI > HCl
- B: HI > HBr > HF
- C: HF > HI > HCl
- D: HI> HBr > HCl

3. Consider the following reaction:

$C_2H_5OH + PCl_5$ ----------> ?

what product(s) may be formed?

- A: C_2H_5Cl, $POCl_3$ and HCl
- B: C_2H_5Cl and $POCl_3$
- C: C_2H_5Cl only
- D: C_2H_5Cl and HCl

4. What creates the polarity between the two atoms of a compound?

- A: Eletron Affinity
- B: Electronegativity
- C: Electropositivity
- D: Atomic size of atoms

5. Grignard reagent react with water give?

- A: Alcohol
- B: Alkyl halide
- C: Alkane
- D: All

6. What is the order of reactivity for halogens in the preparation of Grignard reagent?

- A: $C_3H_7X > C_2H_5X > CH_3X$
- B: $CH_3X > C_3H_7X > C_2H_5X$
- C: $CH_3 > C_2H_5X > C_3H_7X$
- D: $C_2H_5X > CH_3X > C_3H_7X$

7. An alkyl halide can be converted into alkenes by?

- A: Dehydration
- B: Substitution
- C: Elimination
- D: Addition

8. In S_N1 mechanism the nucleophile attacks from which side?

- A: Opposite direction to the leaving group
- B: Same direction as of the leaving group
- C: Independent of direction
- D: Depends on the provided conditions

9. Which solvent is required for the ionization of alkyl halides in the first step of nucleophilic substitution unimolecular mechanism?

- A: Aqueous acetone
- B: Aqueous ethyl alcohol
- C: Aqueous NaOH
- D: A or B both can be used

10. Which of the following do not form Grignard reagent?

- A: RCl
- B: RF
- C: RBr
- D: RI

11. In nucleophilic reaction of alkyl halide if the breakage of C-X bond and Formation of C-Nu bond occurs simultaneously, this reaction is given by?

- A: Primary alkyl halides
- B: Secondary alkyl halides
- C: Tertiary alkyl halides
- D: Both a and b

12. The reactivity of alkyl halides govern by which of the following factor(s)?

- A: Bond Energy
- B: Bond polarity
- C: Bond length
- D: Both a and b

13. How many factors govern the reactivity of alkyl halides?

- A: 2
- B: 4
- C: 6
- D: 8

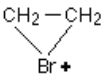
14. S_N1 nucleophilic substitution mechanism is?

- A: Single step bimolecular
- B: Two step bimolecular
- C: Single step unimolecular
- D: Two step unimolecular

15. The rate of E1 reactions depends upon?

- A: The concentration of nucleophile
- B: The concentration of substrate
- C: Both of the above
- D: None of the above

16. In the reaction of ethene with bromine the intermediate form is:

- A: $Br\text{-}CH_2\text{-}CH_2$
- B: $Br\text{-}CH_2^+\text{-}CH_2$
- C: 
- D: $CH_2{=}CHBr$

17. Dehydrohalogenation of alkyl halides yields?

- A: Alkenes
- B: Alkynes
- C: Aloxy alkane
- D: Mixture of alkenes and aloxy alkanes

18. How the state of hybridization changes in the Nucleophilic substitution bimolecular mechanism of alkyl halides?

- A: From sp^3 to sp^2
- B: From sp^3 to sp
- C: From sp^2 to sp^3
- D: From dsp^3 to sp

19. In substitution reactions dihaloalkanes or secondary halogen alkanes give/show:

- A: S_N1 mechanism
- B: S_N2 mechanism
- C: Both S_N1 and S_N2
- D: Both E_1 and E_2

20. Which of the following always give S_N1 mechanism of alkyl halide?

- A: Primary alkyl halide
- B: Secondary alkyl halide
- C: Tertiary alkyl halide
- D: Both b and c

Test 3

1. **Which of the following is a good nucleophile as well as a good leaving group?**

- A: I^-
- B: HSO^-_4
- C: OH^-
- D: NH^-_2

2. **Anti-knocking agent cause which of the following pollution?**

- A: Water pollution
- B: Land pollution
- C: Air pollution
- D: Noise pollution

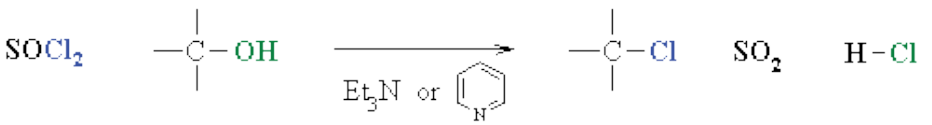
3. **When an electrophile attacks on Alkyl halide, the bond polarity prefers which of the following compound to be most reactive?**

- A: R-F
- B: R-Cl
- C: R-Br
- D: R-I

4. **What is the intermediate product of the S_N1 reactions?**

- A: Carbocation
- B: Carboanion
- C: Carbonium ion
- D: Both a and c

5. **What is the order of reactivity for the reaction given below?**



- A: HBr > HI > HCl
- B: HCl > HBr > HI
- C: HI > HCl > HBr
- D: HI > HBr > HCl

6. **Beta elimination reactions are due to?**

- A: Attack of the incoming nucleophile on alpha hydrogen
- B: Attack of incoming nucleophile on beta hydrogen
- C: Attack of incoming nucleophile on gamma hydrogen
- D: 1st order kinetics

7. When an alkyl iodide is allowed to stand, it darkens because it?

- A: Dehydrates
- B: Is oxidized
- C: Is polymerized
- D: Liberates I_2

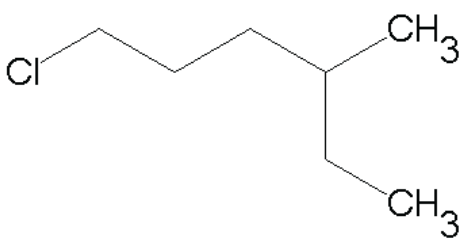
8. Alky halide on treatment with alcoholic KOH gives which of the following?

- A: Aldehydes
- B: Ketones
- C: Alkenes
- D: Alkanes

9. Grignard reagents adds to which of the following functional groups?

- A: -C=S
- B: -C=O
- C: - $C=N_2$
- D: All of them.

10. The I.U.P.A.C. name of the given structural formula is?



- A: 1-Chloro-4-methylhexane
- B: 6-Chloro-3-methylhexane
- C: 1-Chloro-4-ethylbutane
- D: 3-Propyl-3-cloropropane

11. Consider the reaction given below:

$$CH_3CH_2CH_2CH_2Br \xrightarrow{I} CH_3CH_2CH_2CH_2OH$$

$$CH_3CH_2CH_2CH_2Br \xrightarrow{II} CH_3CH_2CH=CH_2$$

Which statement is true?

- A: Reagent for I is KOH in alcohol
- B: Reagent for II is elimination
- C: Reagent for II is KOH in aqueous medium
- D: Reaction I is debromination

12. The preparation of symmetrical alkane (ethane) by electrolysis is through which method?

- A: Wurtz reaction
- B: Williamsons reaction
- C: Kolbe's reaction
- D: Grignard reaction

13. Which of the following is correct about S_N1 reactions?

- A: Retention of the configuration of the alkyl halide molecule
- B: Unimolecular
- C: Reaction rate is the function of the [Alkyl halide]
- D: All of the above

14. Tertiary alkyl halides show?

- A: S_N1 and E1
- B: S_N2 and E2
- C: S_N2 and E1
- D: None of the above

15. Grignard reagents undergoes which of the following?

- A: Nucleophilic substitution
- B: Nucleophilic addition
- C: Both a and b
- D: Neither of them

16. Tertiary alcohol is obtained by treating grignard reagent with?

- A: HCHO
- B: CH_3CHO
- C: CO_2
- D: CH_3COCH_3

17. The correct order of the melting and boiling point of the primary, secondary and tertiary alkyl halides is?

- A: Tertiary > Primary > Secondary
- B: Secondary > Tertiary > Primary
- C: Tertiary > Secondary > Primary
- D: Primary > Secondary > Tertiary

18. Grignard reagents react with CO_2 to form?

- A: Alkane
- B: Aldehyde
- C: Acid
- D: Ketone

19. For which of the following mechanism the first step is same?

- A: E1 and E2
- B: E2 and S_N2
- C: E1 and S_N2
- D: E1 and S_N1

20. The rate of reaction in S_N2 mechanism of alkyl halide is given by?

- A: Rate=[Alkyl halides]
- B: Rate=[Nucleophile]
- C: Rate=[Alkyl halide][Nucleophile]
- D: Rate=k[Alkyl halide][Nucleophile]

Test 4

1. What is the order of reactivity of alkyl halides on the basis of bond strength?

- A: R-F > R-Cl > R-Br > R-I
- B: R-F > R-Br > R-Cl > R-I
- C: R-I > R-Cl > R-Br > R-F
- D: R-I > R-Br > R-Cl > R-F

2. Alkyl halides are considered to be reactive compounds towards nucleophile because?

- A: They have an electrophilic carbon atom.
- B: They have an electrophile carbon and a good leaving group.
- C: They have an electrophile carbon and a bad leaving group.
- D: They have an nucleophilic carbon atom and a good leaving group.

3. Which of the following solvents is used instead of ether in the preparation of grignard's reagent?

- A: $C_6H_5N(CH_3)_2$
- B: THF
- C: $C_6H_5OCH_3$
- D: All

4. What is the nature of bond form between C-Mg in the grignard reagents?

- A: Polar
- B: Highly polar
- C: Nonpolar
- D: Highly nonpolar

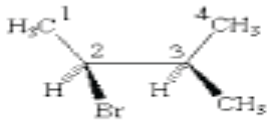
5. Nucleophile attacks on the alkyl halide molecule which is called?

- A: Electrophile
- B: Leaving group
- C: Substrate
- D: Electrophilic center

6. How many sub categories of alkyl halides are there?

- A: Two
- B: Four
- C: Six
- D: Eight

7. The I.U.P.A.C. name of the given structural formula is?



I

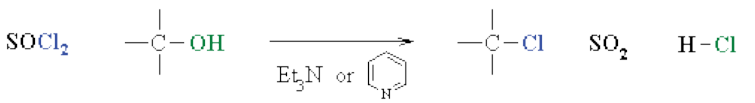
- A: 3-Bromo-2-methylbutane
- B: 2-Bromo isobutyl
- C: 3,3-Dimethyl propylbromide
- D: 2-Bromo-3-methylbutane

8. Grignard reagent react with water give?

- A: Alcohol
- B: Alkyl halide
- C: Alkane
- D: All

9. Primary alkyl halides show?

- A: E2 and S_N2 reactions
- B: E1 and S_N1 reactions
- C: Either E1 or E2
- D: S_N2 and E1 reaction



10. What is the role of pyridine in this reaction?

- A: It acts as catalyst in the reaction.
- B: It is used as solvent in the reaction.
- C: It is used to purify product.
- D: All of the above.

11. Which of the following is the most efficient anti-knocking agent?

- A: Tetramethyl lead
- B: Tetraethyl lead
- C: Tetrapropyl lead
- D: Tetrabutyl lead

12. What is the shape of carbocation?

- A: Tetrahedral
- B: Octahedral
- C: Linear
- D: Planar

13. Primary alcohols is obtained by treating grignard reagent with?

- A: Acetaldehyde
- B: Formaldehyde
- C: Carbondioxide
- D: Propanone

14. Symmetrical alkanes are prepared by which of the following process?

- A: Kolbe's electrolytic method
- B: Williamsons synthesis
- C: Wurtz synthesis
- D: Friedel-crafts reactions

15. When an electrophile attacks on Alkyl halide, the electronegative difference between atoms in an alkyl halide prefers which of the following alkyl halide to be least reactive?

- A: R-F
- B: R-Br
- C: R-Cl
- D: R-I

16. In nucleophilic substitution unimolecular reaction of alkyl halide rate depends on which of the following?

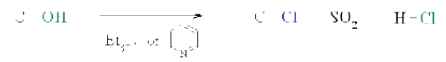
- A: Concentration of alkyl halide
- B: Concentration of nucleophile
- C: Both a and b
- D: Concentration of carbonium ion

17. If halogenoalkanes are mixed with an excess of ethanolic ammonia and heated under pressure, amine are formed. Which amine is formed in the following reaction?

$CH_3CH_2Br + NH_3$ ------> Amine

- A: CH_3CH_2-NH-CH_2CH_3
- B: CH_3CH_2-NH_2
- C: $CH_3CH_2CH_2NH_3$
- D: H_2N-CH_2-CH_2-NH_3

18. Which of the following is the best method to prepare alkyl halides in which a pure product of alkyl halide is obtained?

- A: 
- B:
- C:
- D: All of the above.

19. What are the characteristics of an electrophile?

- A: Electron loving
- B: Positively charged
- C: Neutral
- D: All of the above

20. The alkaline hydrolysis of bromoethane shown below gives alcohol as the product :

CH_3-CH_2-Br -------> CH_3-CH_2-OH

The reagent and the condition used in this reaction may be:

- A: Water at room temperature
- B: Ethanol, Heat
- C: Dilute $NaOH_{(aq)}$, Warm
- D: KOH in alcohol

Alcohols, Phenols & Ethers

TEST 1

1. Which of the following is prepared on the industrial scale through fermentation?

- A: Methanol
- B: Acetic acid
- C: Ethanol
- D: Ethanal

2. $C_{12}H_{22}O_{11}$ (Molasses) $+H_2O$ -------> $C_6H_{12}O_6+C_6H_{12}O_6$. Which enzyme is required for this reaction?

- A: Zymase
- B: Maltase
- C: Diatase
- D: Invertase

3. Ethanol is converted into ethanoic acid by:

- A: Fermentation
- B: Oxidation
- C: Hydration
- D: Hydrogenation

4. Methanol used as solvent for which of the following?

- A: Oils
- B: Varnishes
- C: Paints
- D: All of the above.

5. Ethanol is used for which of the following purposes?

- A: Preservative
- B: In pharmaceuticals preparations
- C: Fuel
- D: All of the above.

6. Ethers do not have which of the following properties?

- A: Volatile liquid, highly inflammable.
- B: Slightly soluble in water.
- C: Hydrogen bonding with water.
- D: Hydrogen bonding with each other.

7. In Lucas test which of the following alcohol type form an oily layer immediately?

- A: Primary alcohols
- B: Secondary alcohols
- C: Tertiary alcohols
- D: None of the above.

8. Monohydric alcohols contain how many -OH group?

- A: One
- B: Two
- C: Three
- D: Four

9. Picric acid is obtained by the nitration of?

- A: Benzene
- B: Cresol
- C: Phenol
- D: Aniline

10. There are how many systems for naming alcohols?

- A: One
- B: Two
- C: Three
- D: Four

11. What is the typical yield of alcohol by industrial fermentation?

- A: upto 10%
- B: Upto 12%
- C: Upto 14%
- D: Upto 18%

12. Which of the following is the general formula of "Alcohol"?

- A: ROR
- B: ROH
- C: ROOH
- D: RCOOH

13. Which of the following is prepared by the fermentation of molasses,starch grain or fruit juices?

- A: Methanol
- B: 1-Propanol
- C: 1-Butanol
- D: Ethanol

14. This is the equation of idoform test,

$C_2H_5OH + 4I_2 + 6NaOH$ ----------> $CHI_3 + HCOONa + 5NaI + 5H_2O$

Which of the following substance form yellow cystals?

- A: CHI_3
- B: NaI
- C: HCOONa
- D: None of the above.

15. R-CH_2-OH + HCl --------> R-CH_2-Cl + H_2O : What are the necessary conditions for this reaction to take place?

- A: $ZnCl_2$ as catalyst
- B: $ZnCl_2$ as catalyst plus wait for 5-10 mins.
- C: $ZnCl_2$ as catalyst plus heat
- D: $ZnCl_2$ as catalyst + H_2SO_4

16. What is th I.U.P.A.C name of CH_3OH?

- A: Methnol
- B: Methyl alcohol
- C: Methanoic
- D: Methanine

17. Phenol was first obtained from which of the following?

- A: Coal tar
- B: Vegetable oil
- C: Fish oil
- D: Petroleum

18. ____ , ____ and _____ are classes of organic compounds which are much closer to water in structure and hence considered as the derivatives of water?

- A: Alcohols, ketones and aldehydes.
- B: Phenols, ethers and carboxylic acid.
- C: Alcohols, phenols and ethers.
- D: Alcohols, ketones and phenols.

19. $C_2H_5OH + 4I_2 + 6NaOH$ ----------> ?

- A: $CHI_3 + HCOONa + 3NaI + 3H_2O$
- B: $C_2H_5I_3 + HCOONa + 5NaI + 5H_2O$
- C: $CHI_3 + HCOONa + 5NaI + 5H_2O$
- D: No yellow crystals.

20. Methanol is not used for which of the following?

- A: Solvent
- B: Antifreeze
- C: Denaturing of alcohol
- D: Preservative for specimen

Test 2

1. Alcohols and phenols are much more closer to one another in which of the following aspects?

- A: Structure
- B: Properties
- C: Both "a" and "b"
- D: None of the above

2. What is the name of the reaction when $C_2H_5ONa + C_2H_5I$ gives an ether?

- A: Hofmann's reaction
- B: Williamson's reaction
- C: Kolbe's reaction
- D: Wurtz's reaction

3. $C_3H_5COCH_3$ + HCN give a reaction in the presence of

- A: Acid
- B: Base
- C: Neutral
- D: Reaction does not happen

4. Primary, secondary and tertiary alcohols can be identified and distinguished by :

- A: Bakwas Test
- B: Lucas Test
- C: Baeyer's Test
- D: Silvor Mirror Test

5. Wheat happens when a nucleophile attacks an alcohol?

- A: C-O bond breaks.
- B: O-H bond breaks.
- C: C-H bond breaks.
- D: All of the above.

6. Phenol on distillation with zinc dust gives?

- A: Acetylene
- B: Benzene
- C: Toulene
- D: Ethylene

7. Which catalyst is used for the preparation of methanol on the industrial scale?

- A: ZnS
- B: ZnO
- C: Cr_2O_3
- D: Both B and C

8. Phenol reacts with CH_3COCl to give which of the following?

- A: Acid
- B: Alcohol
- C: Aldehyde
- D: Ester

9. 2-Propanol oxidise in the presence of $K_2Cr_2O_7/H_2SO_4$ to give which of the following?

- A: Propanone
- B: Propanal
- C: Propene
- D: 2-propanal

10. In the fermentation of ethanol, two glucose molecules give how many ethanol molecules?

- A: 1 molecule
- B: 2 molecules
- C: 3 molecules
- D: 4 molecules

11. Alcohols are obtained by the reaction of grignard reagents with which of the following?

- A: Alkenes
- B: Aldehydes
- C: Ketones
- D: Both b and c

12. Alcohols can be obtained by which of the following processes?

- A: Hydrogenation of alkenes
- B: Hydration of alkenes
- C: Hydrogenation of alkynes
- D: Hydration of alkynes

13. Phenol undergoes hydrogenation in the presence on nickel catalyst at 200 ^oC and gives?

- A: n-Hexanol
- B: Cyclohexanol
- C: Cyclohexane
- D: Cyclohexene

14. Secondary alcohols oxidize in the presence of $K_2Cr_2O_7/H_2SO_4$ to give?

- A: Alkanes
- B: Aldehydes
- C: Acids
- D: Ketones